

Lesser toe deformity; hammer and claw toe in the same foot toes side by side

Hammer and claw toe side by side

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Abstract

Hammer toe and claw toe deformities are common in the geriatric age group and significantly impair patients' quality of life. There are numerous treatment options, ranging from conservative to surgical. A patient may have claw toe or hammer toe deformity for a variety of reasons. In this case report, we present the first instance of a hammer and claw toe deformity occurring in two adjacent toes on the same foot in a young male patient.

Keywords

Lesser Toe, Deformity, Hammertoe, Claw Toe

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Introduction

Lesser toe deformities are common forefoot deformities, negatively affecting the patient's quality of life due to pain and severity of the deformity. Hammer toe and claw toe are the most common deformities among these deformities and constitute the majority of forefoot surgical interventions [1]. The literature varies in its definition of lesser toe deformity [2]. These deformities occur secondary to many different underlying pathologies that can be listed according to their frequency as hallux valgus, long metatarsal, intrinsic imbalance and neurological anomalies [3].

The claw toe is defined by the elongation of the metatarsophalangeal joint. A hammer toe is defined by flexion of the proximal interphalangeal joint. The flexibility of these joints may help distinguish between these abnormalities. When deciding on the surgical treatment for lesser toe deformities, it is very essential to correctly understand the deformity and the factors that cause its formation.

Lesser toe deformities are more common in women, but their incidence increases with age in both sexes [1]. These deformities occur with various combined deformities of the metatarsophalangeal (MTP) joint, proximal interphalangeal (PIP) joint, and distal interphalangeal (DIP) joint. However, the distinctive deformity occurs at the metatarsophalangeal joint [2]. While the PIP joint is in flexion and the DIP joint is in extension in the hammer toe, there is no spasticity or deformity in the MTP joint in the early stage. On the other hand, in the claw toe, the PIP and DIP joint are in the flexion defect, while the MTP joint is in the hyperextension position. These two deformities are generally evaluated in the same group and treated in the same way in daily practice [4].

Numerous factors contribute to the emergence of these deformities. Narrow-toed shoes, which bend the toes at the tip, and high-heeled shoes, which cause hyperextension of the MTP joint, likely explain why women suffer from these deformities in greater numbers [5]. The biomechanical imbalance between the intrinsic flexor and long extensor muscles that developed over time plays a significant role in the emergence of deformity [1]. Although the claw toe deformity is usually bilateral and in more than one toe, hammer toe deformities occur in isolation and are most frequently seen in the second toe. Conservative methods are often tried first. Taping, non-steroidal anti-inflammatory drugs and wide-toed shoes are used. Surgical treatment is applied in patients who are not successful with conservative treatment.

In cases such as ours, where the hammer and claw toe deformities present in the same lesser foot, it is never an easy goal to determine the most appropriate surgical treatment strategy. The purpose of this study was to present a different clinical appearance of a hammer and claw toe in the same foot toes side by side and their surgical results.

Case Report

A 26-year-old male patient with no known chronic disease was admitted to our clinic with complaints of deformity of the toes, forefoot pain that increased with the use of shoes, and inability to obtain suitable shoes. On physical examination, MTP joint of the 2nd toe of the right foot was in the hyperextension position,

PIP joint was flexible, DIP joint flexion deformity was fixed. In the same foot side toe, there was a rigid flexion deformity of the PIP joint in the 3rd toe, while the DIP joint was in the flexible and extension position (Figure 1). The patient was evaluated clinically together with routine radiographs and surgery was planned with the diagnosis of claw toe for the 2nd toe and hammer toe for the 3rd toe.



Figure 1. Preoperative radiological and clinical views of the forefoot



Figure 2. Early postoperative radiological and clinical views of the forefoot



Figure 3. Final clinical view of the forefoot

Under peripheral regional anesthesia, first, a z-shaped incision was applied to the MTP joint capsule between 2-3 metatarsals for the 3rd toe hammer toe deformity. The extensor hallucis longus was elongated fractionally with the Z-plasty technique. A percutaneous tenotomy was performed on the flexor digitorum longus at the level of the DIP joint. After the tenotomy, the two ends of the FDL tendon, which was split longitudinally, were transposed to the dorsal MTP joint and fixed to the proximal medial and lateral of the third proximal phalanx. It was observed that the 3rd toe MTP joint and PIP joint deformity improved. After careful soft tissue dissection with a linear incision made from the dorsal for DIP joint flexion contracture, a retrograde Kirshner wire of 1.2 mm was performed for temporary fixation. In the continuation of the operation, after careful soft tissue dissection with a linear incision made from the dorsal PIP joint for the 2nd toe claw toe deformity, a Kirshner wire of 1.2 mm was also performed for temporary fixation. Since it has been reported in the literature that DIP joint flexion deformity may develop frequently in the early post-operative period after PIP joint arthrodesis in surgical techniques applied for Lesser toe deformities, percutaneous tenotomy was applied to the 2nd toe flexor digitorum longus from the plantar face at the DIP joint level (Figure 2).

A short leg splint was applied for 4 weeks postoperatively. At the end of the 4th week, with the removal of splints and implants, active and passive exercises of the foot and ankle including the forefoot were started and continued for 3 weeks with a physiotherapist (Figure 3). Time to return to work of this patient was approximately 3 months.

Discussion

Although the claw and hammer toe deformities are presented separately in the literature in various studies, the clinical appearance and surgical results of a hammer and claw toe in the same foot toes side by side are presented for the first time in this case report, which clarifies these two often confused deformities. This makes our case unique because of two different formation mechanism deformities seen in the same foot.

Numerous soft-tissue and osseous techniques for the correction of hammer and claw toes followed. Lesser toe abnormalities are extremely common and are routinely treated in orthopedic practice. Despite the long history of scientific publications and the prevalence of these deformities, there is a dearth of surgically guiding literature. Relevant randomized controlled trials are uncommon due to the difficulties associated with establishing homogenous patient groups, constraints associated with grading distinct stages of the pathophysiologic process, and limited reproducibility. The absence of significant clinical complications associated with these deformities may also explain the paucity of prospective studies. In practice, a variety of different surgical procedures can be used to achieve satisfactory results.

While Girdston-Taylor surgery is applied for unfixed flexible hammer toe deformity, fractional lengthening can be performed with capsulotomy and EDL Z-plasty for MTP joint contracture, which is sometimes seen together. In fixed hammer toe deformity, clinically good results can be obtained with PIP joint

arthrodesis or resection interposition arthroplasty [2,6].

Treatment of an unfixed flexible claw toe deformity is similar to that of an unfixed flexible hammertoe deformity. However, dorsal capsulotomy and EDL z-plasty are more frequent in claw toes because MTP joint deformities are fixed compared to hammer toes. In some cases, additional FDL tenotomy may be required to correct DIP joint contracture. In fixed claw toe deformity, there is a defined Weil osteotomy technique [2,3]. The reasons for applying small joint fixation using k-wire in addition to soft tissue procedures for the patient presented in this case report were low risk of early and long-term post-op complications, short surgical time, low infection rate, and early time to return to work.

Conclusion

Depending on the surgeon's theoretical knowledge and practical competence, the aim should be to correct the deformity, eliminate pain and increase the patient's quality of life in a way that fully meets the patient's needs, regardless of which surgical treatment method is applied.

Ethical Approval

This article does not contain any studies with human participants or animals performed by any of the authors.

Scientific Responsibility Statement

The authors declare that they are responsible for the article's scientific content including study design, data collection, analysis and interpretation, writing, some of the main line, or all of the preparation and scientific review of the contents and approval of the final version of the article.

Animal and human rights statement

All procedures performed in this study were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards. No animal or human studies were carried out by the authors for this article.

Informed Consent

The authors certify that they have obtained all appropriate patient consent forms under the terms of national medical laws. In the form the patient has given his consent for his images and other clinical information to be reported in the journal. The patient understand that his name and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed. The study was conducted in accordance with the principles of the Declaration of Helsinki.

Conflict of interest

None of the authors received any type of financial support that could be considered potential conflict of interest regarding the manuscript or its submission.

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